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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,607	04/06/2001	Slobodan Vukicevic	STK/070	5821

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FISH & NEAVE
1251 AVENUE OF THE AMERICAS
50TH FLOOR
NEW YORK, NY 10020-1105

EXAMINER	
ROBINSON, HOPE A	

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/828,607	VUKICEVIC ET AL.	
	Examiner	Art Unit	
	Hope A. Robinson	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28,30-34,47-50 and 57-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-28,30-34,47-50 and 57-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's response to the Office Action mailed May 7,2003 on September 8, 2003 is acknowledged.

Claim Disposition

2. Claims 29, 35-46 and 51-56 have been canceled. Claims 1, 3, 4, 7, 10, 11, 15, 16, 21, 22, 27, 30, 31, 47, 50 and 57 have been amended. Claims 1-28, 30-34, 47-50 and 57-60 are pending and are under examination.

3. The following grounds of rejection are or remain applicable :

4. The amendment filed September 8, 2003 is objected to under 35 U.S.C. 132 because the amendment introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the independent claims for example, claim 1 recite "with the proviso that the osteogenic protein of SEQ ID NO:6 may not be GDF-5 or GDF-6" and there is no support for this in the instant specification. The response points to pages 14-17 of the instant specification for support but none was found. For example on page 14 the specification discloses useful osteogenic proteins and the list includes GDF-5 and GDF-6 and there is no language excluding these two proteins. The remaining pages 15-17 lists several

sequences and no text with the above proviso was found. Therefore, there is no support in the instant specification for the negative proviso recited in the claims.

Applicant is required to cancel the new matter in the reply to this office action.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-28, 30-34, 47-50 and 57-60 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims recite added material, which is not supported by the original disclosure. The independent claims for example, claim 1 recite "with the proviso that the osteogenic protein of SEQ ID NO:6 may not be GDF-5 or GDF-6" and there is no support for this in the instant specification. Applicant state that pages 14-17 of the instant specification provide support for the added material but none was found. For example on page 14 the specification discloses useful osteogenic proteins and the list includes GDF-5 and GDF-6 and there is no language excluding these two proteins. The remaining pages 15-17 lists several sequences and no text with the above proviso was found. Therefore, there is no support in the instant specification for the negative proviso recited in the claims, thus, the specification lacks adequate written description.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-28, 30-34, 47-50 and 57-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 47 and the dependent claims hereto are indefinite for the recitation of "administering an osteogenic device" because it is unclear how to administer a device as the word "administer" means to manage or dispense. It is suggested that applicant amend the claims by deleting "an osteogenic device comprising" because a protein per se is not a device as well as delete the new matter from the claim(s).

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 7-11, 14-16, 25, 27, 47, 48, 57, 59 and 60 remain rejected under 35 U.S.C. 102(b) as being anticipated by Luyten et al. (WO 96/143335, May 17, 1996).

Luyten et al. disclose cartilage-derived morphogenetic proteins having *in vivo* chondrogenic activity (CDMP-1 (GDF-5 or MP-52) and CDMP-2 (GDF-6)) in combination with a matrix, for example, freeze dried cartilage, collagen, hydorxyapatite, polylactic acid,

polyethylene glycol, for the repair of cartilage such as subglottic stenosis, tracheomalacia, chondromalacia patellae, osteoarthritis, joint surface lesions (see claims 1-4, 7-11, 14-16, 25, 27, 47, 48, 57 of the instant application and page 2, lines 10-11; page 3 lines 4-23 and page 4 lines 21-36 of the reference). Luyten et al. teach that the CDMPs can be combined with a number of suitable carriers such as fibrin glue, cartilage grafts and collagens (see claim 14 of the instant specification and see page 19, lines 17-29). The reference also teach that the formulation can be administered via an injection (see claims 59,60). Therefore, the limitations of the claims are met by this reference because Luyten et al. teach the repair/formation of articular and nonarticular cartilage.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103 (a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103 (c) and potential 35 U.S.C. 102 (f) or (g) prior art under 35 U.S.C. 103 (a).

9. Claims 1-6, 7-25, 27, 30-34 47, 48, 57 and 59-60 remain rejected under 35 U.S.C. 103 (a) as being unpatentable over Luyten et al. (WO 96/143335, May 17, 1996) taken with Celeste et al. (WO 95/126035, June 15, 1995) and Cui et al. (Ann. Otol. Rhinol. Laryngol. vol. 106, pages 326-328, 1997) .

Luyten et al. disclose cartilage-derived morphogenetic proteins having *in vivo* chondrogenic activity (CDMP-1 (GDF-5 or MP-52) and CDMP-2 (GDF-6)) in combination with a matrix, for example, freeze dried cartilage, collagen, hydorxyapatite, polylactic acid, polyethylene glycol, for the repair of cartilage such as subglottic stenosis, tracheomalacia, chondromalacia patellae, osteoarthritis, joint surface lesions (see claims 1-4, 7-11, 14-16, 25, 27, 47, 48, 57 of the instant application and page 2, lines 10-11; page 3 lines 4-23 and page 4 lines 21-36 of the reference). Luyten et al. teach that the CDMPs can be combined with a number of suitable carriers such as fibrin glue, cartilage grafts and collagens (see claim 14 of the instant specification and see page 19, lines 17-29). The reference also teach that the formulation can be administered via an injection (see claims 59,60). Luyten et al. do not teach the agent carboxymethylcellulose. However, Celeste et al. teach a pharmaceutically acceptable vehicle or carrier such as collagen, poly(lactic acid), polymers of lactic acid and poly(glycolic acid) and agents such as carboxymethylcellulose (see claims 1, 19, 25, page 16 and 19). Celeste et al. also teach bone morphogenetic proteins useful in treatment of tendon or ligament defects such as induction and repair (see page 326) and that BMPs are useful in the formation of bone, cartilage and tendon, for example BMP-12 (see page 1 of the reference).

In addition, Cui et al. teach the repair of thyroid cartilage defect with bone morphogenetic protein by administering bBMPs for the replacement of lost laryngotracheal cartilage which

results in new bone formation. Cui et al. teach that cartilage was initially formed but eventually gave room to new bone. Cui et al. differs from the claimed invention in that the replacement tissue which is formed is not functional cartilage, but bone (see claims 1-6, 8-18, 20-25, 27, 30-34). However, Cui et al. teach that the ideal way to a repair laryngotracheal defect is by inducing replacement cartilage growth.

Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the claimed invention as a whole by combining the teachings of the references because all the references teach BMPs for inducing replacement growth of defects in cartilaginous tissue. One of ordinary skill in the art would be motivated to combine the references because Cui et al. teach that the ideal method for replacing lost laryngotracheal cartilage would be to induce growth of host replacement cartilage that would bridge an entire defect by means of a cartilage-inducing implant. Moreover, Cui et al. teach that laryngotracheal defect is a serious and difficult problem since it causes laryngotracheal stenosis and Celeste et al. teach that BMPs are useful for the induction or repair of bone, cartilage and tendon. Thus, the claimed invention was obvious to make and use at the time it was made and was *prima facie* obvious.

10. Claims 1-6, 8-25, 27 and 30-34 remain rejected under 35 U.S.C. 103 (a) as being unpatentable over Cui et al. (Ann. Otol. Rhinol. Laryngol. vol. 106, pages 326-328, 1997) in view of Celeste et al. (WO 95/126035, June 15, 1995).

Cui et al. teach the repair of thyroid cartilage defect with bone morphogenetic protein by administering bBMPs for the replacement of lost laryngotracheal cartilage which results in new bone formation. Cui et al. teach that cartilage was initially formed but eventually gave room to new bone. Cui et al. differs from the claimed invention in that the replacement tissue which is formed is not functional cartilage, but bone (see claims 1-6, 8-18, 20-25, 27, 30-34). However, Cui et al. teach that the ideal way to a repair laryngotracheal defect is by inducing replacement

cartilage growth. In addition, Celeste et al. teach bone morphogenetic proteins useful in treatment of tendon or ligament defects such as induction and repair (see page 326). Celeste et al. teach that BMPs are useful in the formation of bone, cartilage and tendon, for example BMP-12 (see page 1 of the reference). Celeste et al. also teach a pharmaceutically acceptable vehicle or carrier such as collagen, poly(lactic acid), polymers of lactic acid and poly(glycolic acid) and agents such as carboxymethylcellulose (see claims 1, 19, 25, page 16 and 19).

Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the claimed invention as a whole by combining the teachings of the references because both references teach BMPs for inducing replacement growth of defects in cartilaginous tissue. One of ordinary skill in the art would be motivated to combine the references because Cui et al. teach that the ideal method for replacing lost laryngotracheal cartilage would be to induce growth of host replacement cartilage that would bridge an entire defect by means of a cartilage-inducing implant. Additionally, Cui et al. teach that laryngotracheal defect is a serious and difficult problem since it causes laryngotracheal stenosis. Moreover, Celeste et al. teach that BMPs are useful for the induction or repair of bone, cartilage and tendon. Thus, the claimed invention was obvious to make and use at the time it was made and was *prima facie* obvious.

11. Applicant's response filed September 8, 2003 has been considered. It is noted that applicant filed a new Oath/Declaration which has been considered. Note that the rejection under 35 U.S.C. 112, first paragraph, enablement has been withdrawn, however, a new rejection under this statue has been instituted because the amendment introduced new matter. Note also the new ground of rejection instituted under 35 U.S.C. 112, second paragraph based on applicant's amendments to the claims for the reasons stated above.

Applicant's arguments concerning the art rejections made under 35 U.S.C. 102 and 103 have been considered. It is noted that applicant, amended the claims by inserting a negative proviso to obviate the art rejections as stated in the response on page 14. However, the amendatory language in the claims was not found in the instant specification. Therefore applicant's statement that "claims 1 and 47 (and therefore the dependent claims) do not include GDF-5 and GDF-6" is not persuasive and the references by Luyten et al., Celeste et al., and Cui et al. remains relevant to the claimed invention. Therefore, the rejections of record remains.

Conclusion

12. Applicant's amendment necessitated the new/modified ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. No claims are presently allowable.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hope A. Robinson whose telephone number is (703)308-6231. The Examiner can normally be reached on Monday - Friday from 9:00 A.M. to 6:30 P.M. (EST).

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor Christopher S.F. Low, can be reached at (703) 308-2932.

Any inquiries of a general nature relating to this application should be directed to the Group Receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted by facsimile transmission. The official fax phone number for Technology Center 1600 is (703) 308-2742. Please affix the Examiner's name on a cover sheet attached to your communication should you choose to fax your response. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG (November 15, 1989).

Hope A. Robinson, MS

Patent Examiner

CHRISTOPHER S. F. LOW
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600